## REMARKS/ARGUMENTS

I. Introduction:

Claims 1, 4, 7-13, 16, and 19 are amended herein. Claims 1-19 are currently pending.

II. Claim Rejections – 35 U.S.C. 112:

Claims 4 and 16 have been amended to clarify that the priority sub-tree is associated with the priority packet selected for transmission.

As described at page 13, lines 13-17 of the specification, when a priority node is selected by a scheduling algorithm, the ancestor nodes of the selected priority nodes in the original unified class hierarchy should be debited in some way for the transmitted traffic. Accordingly, the scheduling state of the non-priority sub-tree is updated to reflect transmission of a priority packet.

III. Claim Rejections – 35 U.S.C. 101:

Claims 7 and 13 have been amended to specify a computer-readable medium storing computer-executable instructions.

As amended, claims 7-18 are believed to comply with the requirements of 35 U.S.C. 101.

IV. Claim Rejections – 35 U.S.C. 103:

Claims 1 and 7 stand rejected under 35 U.S.C. as being unpatentable over "Hierarchical Packet Fair Queuing Algorithms" (Bennett) in view of U.S. Patent

Application Publication No. 2003/0179703 (Levy et al.). Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. in view of Bennett.

Claims 1, 7, and 13 have been amended to specify that a new priority node and a new non-priority node are created and that the selected non-priority nodes are children of the new non-priority node in the non-priority sub-tree, and that the selected priority nodes are children of the new priority node in the priority sub-tree.

Bennett describes hierarchical packet fair queuing algorithms. In rejecting the claims, the Examiner refers to the real-time node and best-effort node shown in Fig. 1. Bennett does not show or suggest selecting non-priority nodes to establish a non-priority sub-tree or selecting priority nodes to establish one or more priority sub-trees. Instead, Bennett discloses a level split into two nodes to provide 20% best-effort traffic. There are no priority and non-priority sub-trees. There are simply individual nodes representing best-effort or real-time traffic.

Furthermore, Bennett does not show or suggest creating a new non-priority node and a new priority node, wherein the selected non-priority nodes and selected priority nodes are children of the respective new non-priority node and new priority node, as set forth in the amended claims.

As noted by the Examiner, Bennett also does not disclose applying a first scheduling algorithm to a non-priority sub-tree to select a packet for transmission if the priority sub-tress are empty, or selecting a priority packet from a priority sub-tree if the priority sub-trees are not empty. The Examiner cites Levy et al. with regard to these limitations.

Levy et al. disclose an automatic router configuration based on traffic and service level agreements. In rejecting the claims, the Examiner refers to paragraph [0039] of Levy et al. This section of the packet describes algorithms that may be used to select a queue that is chosen to provide a packet to a transmit buffer. Examples provided include an algorithm that always selects a packet from the highest priority non-empty queue, an algorithm that selects packets from lower priority queues at some

regular intervals even when higher priority packets are queued up, or an algorithm that employs a probabilistic approach for selecting a queue, where higher priority packets have a higher probability of being selected.

Neither Bennett nor Levy et al., either alone or in combination, show or suggest applying a first scheduling algorithm to a non-priority sub-tree to select a packet for transmission if the priority sub-tress are empty, or selecting a priority packet from a priority sub-tree if the priority sub-trees are not empty, as set forth in the claims. The references do not apply scheduling to non-priority and priority sub-trees. Moreover, neither reference shows or suggests applying a first scheduling algorithm to non-priority nodes if and only if queues of priority nodes are empty.

In contrast to applicants' invention, Levy et al. may select a packet from a highest priority non-empty queue. There are no priority and non-priority nodes to check, they simply select a packet from a highest priority non-empty queue. In another example, Levy et al. select packets from lower priority queues even when higher priority queues are non-empty. This teaches away from applicants' invention.

Accordingly, claims 1, 7, and 13, and the claims depending therefrom, are submitted as patentable over Bennett and Levy et al.

Claims 2, 6, 8, 12, and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett and Levy et al., and further in view of U.S. Patent No. 7,006,513 (Ali et al.).

Ali et al. do not show or suggest selecting a highest priority non-empty sub-tree from one or more priority sub-tress or applying a second scheduling algorithm to a highest priority non-empty sub-tree to select a priority packet for transmission, as set forth in claims 2 and 8.

Ali et al. disclose a method and system for pipelining packet selection. Fig. 3 illustrates a scheduling hierarchy which is used to select a packet from egress queues 350-360 located at leaf level 345 of the hierarchy. Ali et al. simply disclose a

scheduling process for selecting one of a plurality of queues at a node. There is no selection of a highest priority non-empty sub-tree before selecting a priority packet within the highest priority non-empty sub-tree for transmission.

Claims 2-6, 8-12, and 14-18 are therefore submitted as patentable for this additional reason.

With regard to claims 6 and 12, Bennett does not teach adding a length of a selected priority packet to a length of a next transmitted packet associated with an identified node to be used in making further scheduling decisions. Bennett discloses that when a packet arrives at a leaf node, if the session node's logical queue for its parent node is not empty, the packet is appended to the end of the physical queue for the session. The length of the packet is not added to the length of another packet for use in making scheduling decisions.

Claims 3-5, 9-11, and 15-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett and Levy et al. and Ali et al,, and further in view of U.S. Patent No. 6,560,230 (Li et al.).

The Li et al. patent is directed to packet scheduling wherein preference is given to higher priority packets while treating lower priority packets fairly. In order to avoid transmission delay of a high priority packet, scheduling engines of Li et al. pass a newly arrived high priority packet in place of an already selected lower priority packet. A virtual time V at the scheduling engine is updated after the higher priority packet is passed. For example, the virtual time V of the scheduling engine may be advanced to the start time S of the packet with the earliest start time S.

With regard to claims 4, 10, and 16 Bennett does not teach identifying a node with a non-priority sub-tree that has a parent relationship to a node within a priority sub-tree associated with a transmitted packet. In Fig. 1 of Bennett, the examiner refers to the best-effort node as a non-priority node and the real-time node as a priority node. There is no relationship between the real-time node and the best-effort node. Even in

the example on page 678, there is no parent relationship between a non-priority node and a priority node.

Furthermore, Li et al. only update a virtual time of a single scheduling engine. Li et al. do not update a scheduling state of an identified node and ancestor nodes of an identified node within a non-priority sub-tree.

Accordingly, claims 4, 10, and 16 are submitted as patentable for this additional reason.

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. in view of Ali et al.

Li et al. do not show or suggest means for selecting non-priority nodes to establish a non-priority sub-tree or means for selecting priority nodes to establish one or more priority sub-tress corresponding to one or more priority levels. As shown in Fig. 7, some of the leaf scheduling engines correspond to real time classes and the other leaf scheduling engines correspond to best effort classes. There are no priority and non-priority sub-trees.

Furthermore, neither Li et al. nor Ali et al. show or suggest means for creating a new priority and non-priority nodes, wherein the selected non-priority nodes are children of the new non-priority node in the non-priority sub-tree, and that the selected priority nodes are children of the new priority node in the priority sub-tree, as set forth in amended claim 19.

Accordingly, claim 19 is submitted as patentable over the cited references.

V. Conclusion:

For the foregoing reasons, Applicants believe that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a

telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

Respectfully submitted,

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